

ABSTRACT OF THE DISCLOSURE

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3 A flow conditioning apparatus, a separation system which includes the flow
4 conditioning apparatus and cooperating downstream separation equipment, and
5 a method of using the system are described. The system separates liquid
6 components of differing densities from a fluid mixture. The flow conditioning
7 apparatus includes an inlet, an outlet, and a swirl chamber extending along a
8 swirl axis. The inlet and outlet cooperate with the swirl chamber to create a
9 swirling of a fluid mixture passing through the swirl chamber to ideally induce
10 coalescence of liquid droplets. The inlet and the outlet typically direct fluid to flow
11 in a circumferential direction relative to the swirl axis to create a helical flow. The
12 flow of the fluid mixture through the apparatus encounters a minimum of fluid
13 shear and associated droplet dispersion. The enhanced quantity of droplets
14 coalesced, or at least the quantity of pre-existing droplets entering the control
15 apparatus which are not substantially dispersed by fluid shear, increases the
16 efficiency of liquid separation by the cooperating downstream separation
17 equipment.

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